

Notice of Allowability

Application No.

10/564,571

Examiner

John M. Corbett

Applicant(s)

TIMMER, JAN

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 13 January 2006.
2. ☒ The allowed claim(s) is/are 1-26.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 13 January 2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview for Thomas Lundin on 14 December 2007.

The application has been amended as follows:

Claim 26, line 6; replace "for producing" with --configured to produce--.

Claim 26, line 7; replace "performing" with --configured to perform--.

REASONS FOR ALLOWANCE

2. Claims 1-26 are allowed.
3. The following is an examiner's statement of reasons for allowance:

With respect to claim 1, the prior art fails to teach or reasonably suggest a method including the steps of

replacing pixels of the uncorrected reconstructed image that are of the high density and low density classes with pixel values of the low density pixel class to generate a synthetic image, forward projecting the synthetic image to generate synthetic projection data, and

replacing acquired projection data contributing to the pixels of the high density class with corresponding synthetic projection data to generate corrected projection data, when taken in combination with all of the other limitations of the claim. Claims 2-17 are allowed by virtue of their dependency.

With respect to claim 18, the prior art fails to teach or reasonably suggest an apparatus including

a pixel replacement means for replacing pixels of the uncorrected reconstructed image that are of the high density and low density classes with pixel values of the low density pixel class to generate a synthetic image,

a forward projecting means for forward projecting the synthetic image to generate synthetic projection data, and

a projection replacement means for replacing acquired projection data contributing to the pixels of the high density class with corresponding synthetic projection data to generate corrected projection data, when taken in combination with all of the other limitations of the claim. Claims 19-25 are allowed by virtue of their dependency.

With respect to claim 26, the prior art fails to teach or reasonably suggest an apparatus including a processor configured to produce a corrected reconstructed image from the acquired tomographic projection data, the processor configured to perform a method including

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replacing pixels of the uncorrected reconstructed image that are of the high density and low density classes with pixel values of the low density pixel class to generate a synthetic image,

forward projecting the synthetic image to generate synthetic projection data, and replacing acquired projection data contributing to the pixels of the high density class with corresponding synthetic projection data to generate corrected projection data, when taken in combination with all of the other limitations of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hsieh (US 6,035,012) discloses segmenting an uncorrected reconstructed image into three or more classes, performing a forward projection of the classes, correcting the projection data and obtaining a corrected reconstructed image (Abstract, Col. 4, lines 24-30, Col. 5, lines 4-17 and Figure 4).

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Hsieh (US 6,266,388) discloses segmenting image data into a plurality of data sets, producing an error image from the sets and then generating a corrected image from the initial image using the error image (Abstract).

De Man et al. ("Metal Streak Artifacts in X-ray Computed Tomography: A Simulation Study", IEEE Nuclear Science Symposium, 1998, Volume 3, pages 1860-1865) discloses an iterative method to correct for beam hardening, scatter, noise and the exponential edge-gradient effect which contribute to metal streak artifacts (Abstract and Figure 15).

Yamada et al. (20010028696 A1) discloses correcting for metal artifacts by forward projecting a reconstructed image by weighting the high-absorbing regions to obtain image estimates that are used to correct the reconstructed image (Abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Corbett whose telephone number is (571) 272-8284. The examiner can normally be reached on M-F 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

14 December 2007 JMC

A handwritten signature, possibly initials, in black ink.A handwritten signature in black ink, appearing to read "Edward J. Glick".

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER